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SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/393,677	02/24/95	KIRA H	950107

D1M1/1204

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EXAMINER	
GRAYBILL, D	
ART UNIT	PAPER NUMBER
1107	

DATE MAILED: 12/04/96

Please find below a communication from the EXAMINER in charge of this application.

Commissioner of Patents

Office Action Summary	Application No. 08/393,677	Applicant(s) Kira et al.
	Examiner David E. Graybill	Group Art Unit 1107

☒ Responsive to communication(s) filed on *16 Aug 1996* .

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-8* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-8* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *10*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

Claims 1-8 are rejected under 35 U.S.C. § 103 as being unpatentable over the combination of applicant's admitted prior art, Maeda '486, Fujimoto and DiStefano.

Applicant teaches as conventional a process comprising the steps of forming leveled projection electrode studs 14 on a semiconductor chip 11 by wire-bonding; forming conductive adhesive 16a on the studs by a conductive adhesive 16 that has been skidded on a plate 15a and then transcribed onto the studs; applying a thermosetting insulating adhesive 18 to mounting parts of a substrate 17; aligning the chip to the mounting parts; heating the substrate; and performing a fixing of the semiconductor with a final pressure and a thermosetting temperature of the adhesive; page 1, line 23 to page 2, line 22.

However, applicant does not teach as conventional a process comprising the steps of heating the adhesive on the substrate with a half-thermosetting temperature, and performing a first fixing of plural chips with a first pressure. Nonetheless, Maeda, at column 1, lines 7-13 and 46-59; column 3, lines 48-67; column 4, lines 13-55; and column 5, lines 19-47, teaches this process. Moreover, it would have been obvious to combine the process of Maeda with the process of applicant's admitted prior art because it would enable accurate alignment of plural chips before the final pressing and fixing step of the conventional art.

Although, as cited supra, the combination of applicant's admitted prior art and Maeda teaches a process comprising plural chips, the combination does not explicitly teach a process wherein a second fixing is simultaneously performed for each of the chips with a second pressure. Nevertheless, Fujimoto, at column 5, lines 58-63, teaches this process. Moreover, it would have been obvious to combine the process of Fujimoto with the process of the combination of applicant's admitted prior art and Maeda because it would reduce manufacturing time.

Furthermore, although Maeda does not explicitly teach a second fixing pressure higher than the first pressure it would have been an obvious matter of design choice bounded by well known bonding process constraints and ascertainable by routine experimentation and optimization to choose this particular fixing pressure relationship because applicant has not disclosed that the particular relationship solves any unobvious problem or is for any particular unobvious purpose, and it appears prima facie that the process would possess utility using another pressure relationship.

In addition, although the combination of applied prior art teaches a process comprising the steps of heating with a half-

thermosetting temperature, aligning and first fixing the chips, the applied prior art does not explicitly teach a process comprising **concurrently** heating with a half-thermosetting temperature, aligning and first fixing the chips. Yet, DiStefano, at column 9, line 3 to column 10, line 2, teaches this process. Moreover, it would have been obvious to combine the process of DiStefano with the process of the combination of applicant's admitted prior art, Maeda and Fujimoto because it would reduce adhesive void formation.

Applicant's remarks filed in paper no. 12 have been considered but are deemed to be moot in view of the new grounds of rejection.

The prior art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show processes of manufacturing a semiconductor package similar to the process of the instant claimed invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is

reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist at (703) 308-0661.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday; 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, supervisory primary examiner, John Niebling, can be reached at (703) 308-3325.

The fax phone number for group 1100 is (703) 305-3599.

David E. Graybill
Patent Examiner
Art Unit 1107

D.G.
27 November 1996